

Appl. No. 10/052,953
Amendment dated June 14, 2004
Reply to Office action dated April 15, 2004

Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for detecting an object entering a monitored area, the method comprising the steps of:

illuminating the monitored area with a pattern, the pattern defining one or more lighter regions and one or more darker regions;

capturing a live image of the monitored area, including the pattern; and

detecting an object entering the monitored area when a change is detected in the pattern in the live image.

2. (Previously Presented) A method according to claim 1 wherein the detecting step detects an object entering the monitored area when the change in the pattern exceeds a predetermined threshold.

3. (Original) A method according to claim 1 further comprising the steps of:
capturing a reference image of the monitored area, including the pattern; and
comparing the reference image and the live image to detect a change in the pattern in the live image.

4. (Original) A method according to claim 1 wherein the monitored area is illuminated with a static pattern.

5. (Original) A method according to claim 1 wherein the monitored area is illuminated with a dynamic pattern.

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6. (Original) A method according to claim 3 wherein the reference image and the live image each have a number of mask windows, and wherein the comparing step compares selected mask windows of the reference image to selected mask windows of the live image.

7. (Original) A method according to claim 6 wherein the comparing step compares the selected mask windows of the reference image and the live image using one or more comparing algorithms.

8. (Original) A method according to claim 7 wherein the comparing step compares two or more of the selected mask windows using different comparing algorithms.

9. (Previously Presented) A method according to claim 6 further comprising the step of performing a predefined action if the detecting step detects an object entering one of the selected mask windows.

10. (Original) A method according to claim 9 wherein the predefined action is different depending on in which mask window an object is detected.

11. (Previously Presented) A method for detecting an object entering a monitored area, the method comprising the steps of:

illuminating the monitored area with a first pattern;

creating moiré interference bands by imposing a second pattern shifted relative to the first pattern;

capturing a live image of the monitored area, including the moiré interference bands; and

detecting an object entering the monitored area when a change is detected in the moiré interference bands in the live image.

12. (Previously Presented) A method according to claim 11 wherein the detecting step detects an object entering the monitored area when the change in the moiré interference bands exceeds a predetermined threshold.

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13. (Original) A method according to claim 11 further comprising the steps of:
capturing a reference image of the monitored area, including the moiré interference bands;
and

comparing the reference image and the live image to detect a change in the moiré
interference bands in the live image.

14. (Original) A method according to claim 13 wherein the comparing step includes
subtracting at least part of the live image from at least part of the reference image or visa-versa.

15. (Original) A method according to claim 11 wherein the moiré interference bands are
created by illuminating the monitored area with the second pattern.

16. (Original) A method according to claim 11 wherein the moiré interference bands are
created by providing a mask or grating having the second pattern between the monitored area
and an image capture device.

17. (Original) A method according to claim 11 wherein the moiré interference bands are
created by digitally imposing the second pattern on the live image.

18. (Original) A method according to claim 11, wherein the reference image of the
monitored area and the live image of the monitored area are captured with a sensor.

19. (Original) A method according to claim 18, wherein the first pattern is illuminated
using light from a specified spectral region and the sensor is attuned to the spectral region.

20. (Original) A method according to claim 19, wherein the specified spectral region is
near infrared.

21. (Original) A method according to claim 11, wherein the first pattern is illuminated
using light from a first illumination source, and the second pattern is imposed using a second
illumination source.

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22. (Previously Presented) A method for detecting an object entering a monitored area, the method comprising the steps of:

illuminating the monitored area with a first pattern;

creating moiré interference bands by imposing a second pattern that is different relative to the first pattern;

capturing a reference image of the monitored area;

capturing a live image of the monitored area, including the moiré interference bands; and

detecting an object in the monitored area when a change is detected in the moiré interference bands in the live image, and wherein the interference bands of the reference image are compared with the live image using a Radon filter oriented perpendicular relative to the interference bands.

23. (Previously Presented) A method for detecting an object in a monitored area comprising:

illuminating the monitored area with a specified pattern having bright areas and dark areas, each with a brightness level;

capturing a plurality of reference image mask windows, each mask window covering at least part of the monitored area;

for each reference image mask window, calculating a difference between the brightness levels corresponding to the light areas in the mask window and the brightness levels corresponding to the dark areas in the mask window;

for each reference image mask window, capturing a corresponding live image mask window;

for each live image mask window, calculating a difference between the brightness levels corresponding to the light areas in the mask window and the brightness levels corresponding to the dark areas in the mask window; and

indicating that an object has been detected when, for any mask window, the difference calculated for the live image is different from the corresponding difference calculated for the reference image by at least a specified threshold value.

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24. (Original) A method according to claim 23 wherein the illuminating step includes illuminating the monitored area with a first specified pattern and a second specified pattern to create one or more moiré interference bands.

25. (New) The method according to claim 1 wherein the pattern includes two or more darker regions, wherein at least selected darker regions are separated from an adjacent darker region by a lighter region.

26. (New) The method according to claim 1 wherein the pattern includes two or more lighter regions and two or more darker regions.